EDITORIAL COMMENT†

DIETARY CONTROL OF RENAL HYPERTENSION

In 1944 Grollman[1] of the Department of Experimental Medicine, Dallas, Texas, suggested a simplified method for the production of chronic renal hypertension in the mouse, rat, rabbit and dog. The method consisted essentially in passing a loop of cotton thread or tape over the two poles and body of the kidney and tightening the ligature sufficiently to deform normal kidney shape. He found that about 20 per cent of the rats and rabbits develop a moderate degree of hypertension following such compression of a single kidney. About 70 per cent develop pronounced hypertension following bilateral renal compression.

In a typical experiment on dogs, the blood pressure rose from a normal of about 12 mm. Hg. to 150 mm. Hg. during the first two months after unilateral renal compression. The second kidney was then compressed, following which the pressure rose to 200 mm. Hg. The maximum was reached by the end of one year. The pressure remained at this high level for the next 8 months during which the animal was under observation. In rats a chronic hypertension of about 170 mm. Hg. was regularly produced by similar bilateral compression.

The ease and regularity with which hypertension can be produced in rats led Grollman[2] to select these animals for a study of the possible therapeutic effects of various types of diet. In a typical experiment pulverized Rockland Farm rat ration was dialyzed for 4 to 5 days, till all chlorides had been removed. The dried dialyzed diet was then enriched with synthetic vitamins (thiamin, riboflavin, hexabione, calcium pantothenate and niacin), cod-liver oil, and Osborne-Mendel salt mixture from which all sodium salts had been excluded. Twelve hypertensive rats, whose average blood pressure was 17 mm. Hg. were changed from the routine laboratory diet to this dialyzed food. Within 6 days their average blood pressure had fallen to 125 mm. Hg., at which low level it remained till the end of the experiment (18 days). On returning these rats to the routine stock diet, the hypertensive state was restored quantitatively within 6 days. Similar lowering of the hypertensive state was noted in rats placed on a diet composed entirely of ground peanuts, soy beans, rice and potatoes.

In attempts to determine the essential factor in this therapeutic effect it was found that the anti-hypertensive properties of the dialyzed diets could be completely destroyed by the addition of 1 per cent NaCl, while its anti-hypertensive titer was not reduced by the addition of 1 per cent KCl. From this and other data it seemed probable that radical sodium restriction is the essential factor in overcoming renal hypertension in rats.

In order to determine whether or not the marked reduction in blood pressure induced by radical sodium restriction for long periods of time is deleterious to previously hypertensive animals, 62 hypertensive rats were divided into 2 equal groups, matched as to their blood pressure. One group received the regular stock diet. The other group was given the dialyzed low sodium diet. By the end of 100 days, but 8 (or 25 per cent) of the regularly fed rats had survived. The concurrent survival rate in the low-sodium group was twice as great, i.e., 15 rats (or 50 per cent). The low-sodium, anti-hypertensive diet is thus apparently beneficial insofar as duration of life is concerned.

The mechanism of the anti-hypertensive effects of sodium restriction has not yet been determined. It is known that there is a "dry edema" or accumulation of salt and water in the tissues of hypertensive patients. Grollman postulates that when subjected to a drastic sodium restriction the hypertensive rats rid themselves of this plethora of salt and water in the fixed tissues, with a secondary reduction in blood pressure. This and other suggested possibilities are now under investigation.

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TELEKINETIC ANTIBODY REACTION

A revolutionary new theory of antigen-antibody reaction is suggested by Rothen[1] of the Rockefeller Institute as a result of his studies of the physio-chemical properties of multimolecular antigenic films.

About ten years ago Langmuir[2] and associates developed a method of transferring materials spread as a monomolecular film on a bath surface to highly polished stainless steel slides. The transferred material was held in place by a thin layer ("reference film") of barium stearate, uranyl acetate or other adhesive material. Thus transferred the mono-film may be subjected to chemical reactions and the resulting changes in its thickness measured by optical methods.

Chambers[3] and his associates of the University of Pennsylvania, adapted the Langmuir technique to the preparation of monomolecular and multimolecular films of bacterial antigens. They exposed these immobilized or fixed antigenic films to specific immune serum. After thoroughly washing the exposed slides with saline solution and distilled water, the increased film thickness resulting from union with homologous antibodies was

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measured by refraction methods. Control tests were made with normal serum and with heterologous antiserums.

Adopting the Chambers technique Rothen and Landsteiner[4] of the Rockefeller Institute found that a monomolecular layer of bovine albumen 6 to 8 Å thick, would attract and hold firmly a sufficient amount of antibovine antibody to increase the thickness of the film by about 40 Å. Heterologous antibodies gave no appreciable increase. This means that a single layer of bovine albumen would attract and firmly hold about 10 superimposed layers of specific antibody. In this latest work Rothen[1] tested multimolecular films. He found that if the number of bovine albumen layers was increased to 2, the thickness of the adherent antibody film was increased to about 60 Å. With 4 bovine antigenic layers the increase was to 104 Å, and with 8 layers to 149 Å. Control tests with heterologous (anti-egg-albumen) antibody gave negligible increases.

These data show that the effective range of specific attraction between antigen and antibody is "in the order of hundreds of Å." Rothen found that this telekinetic attraction is effective through a thin biological membrane. He tested membranes consisting of 6 to 10 superimposed layers of egg albumin. Through this egg albumin screen the antigen would attract and firmly hold as much as 86 Å of homologous specific antibody.

Rothen offers no theory to explain this presumptive telekinesis. He believes, however, that it is of "major importance from the standpoint of biology, [since] the reaction offers a very interesting example of the physical forces involved between large molecules." If so, the implied specific electrodynamic attraction sphere surrounding each protein molecule would have numerous basic applications in physiological and biochemical research. It might render many of the conventional theories of immunity of little more than historic interest and would have numerous other clinical applications. These and other suggested possibilities are now under investigation.

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Casimir-Joseph Davaine (1812-1882).—"I congratulate myself to have so often been the follower of your scientific researches"—wrote Pasteur to the man who, with Rayer, was the first to see the bacillus of anthrax. This French pathologist, parasitologist, and experimenter, was an initiator in every sense of the word. His treatise on animal parasites of man and domestic animals was an important one, as were those on infective diseases and septicemia.—Warner's *Calendar of Medical History.*

American Medical Association Plans a National Sickness Insurance Program

Organized medicine, through the Board of Trustees of the American Medical Association, on February 16, announced preliminary plans for the development of a nationwide system of voluntary sickness insurance protection, to be operated on a non-profit basis by local medical groups.

Details of the program, including costs, benefits and standards, now are being worked out by a newly formed subsidiary federation, known as Associated Medical Care Plans, Inc. Details should be ready for early release to the public.

While premium charges will vary in different parts of the country, the average cost to any individual policy holder will be "considerably less" than the $144 annual payroll deduction suggested under President Truman's compulsory health insurance program.

In setting up standards of acceptance for voluntary prepayment medical and hospital care plans now in operation, the trustees and the A.M.A. Council on Medical Care, have decried all such plans must meet the following requirements before they may display the Association's seal of approval.

(1) Have the approval of the State or county medical society in the area in which they operate.

(2) The medical profession in the area must assume responsibility for the medical services included in the benefits.

(3) Provide free choice of a qualified doctor of medicine, and maintain the personal, confidential relationship between patient and physician.

4) Be organized and operated to provide the greatest possible benefits in medical care to the subscriber.

Benefits under any of the plans, it was stated, may be in terms of either cash indemnity or in units of medical service. A house call would count for so many units and a visit to the physician's office would count for a varying number of service points.

The subsidiary medical plans care group, which is engaged in coördinating the various prepayment programs now in operation, also will seek to establish a reciprocal relation among all plans to permit subscribers to transfer their membership from one state to another. A central clearing house is to be located at A.M.A. headquarters in Chicago.

Seven Times As Many People Now Own Life Insurance As In 1900

Year	*Number of Policyholders*	*Average Amount Owned Per Policyholder*
1900	10,000,000	$860
1918	31,000,000	$960
After World War I		
1945	71,000,000	$2,175
After World War II		

Despite the fact that seven times as many people own life insurance now as in 1900, there are fewer full-time ordinary life insurance agents in the business. The number of full-time agents decreased 31 per cent since the start of World War II. In the past year new full-time ordinary life agents entering the business were 55 per cent fewer than in 1940, according to the annual census of life insurance agents, just released by the Life Insurance Agency Management Association of Hartford. Ordinary companies showed a 40 per cent increase in sales of new insurance during the six-year period in spite of the decrease in agents.